

# Agricultural *Literacy*



**Book Bundle**



## About

# Minnesota Agriculture in the Classroom

## Program Overview

Minnesota Agriculture in the Classroom (MAITC) was established in 1985 as a unique public/private partnership between the Minnesota Department of Agriculture (MDA) and the state's agriculture and education communities. Today, the MDA support is for ongoing educational materials development, teacher professional development, and program marketing and outreach, while the MAITC Foundation raises and manages private sector funds to fulfill program needs. This successful collaboration has garnered the program important credibility and continuity within the state's education community while consistently being able to offer free educational resources to a myriad of audiences wanting to immerse themselves in learning about agriculture.

## Our Vision: Agriculture is valued by ALL

Our Mission: Increasing agricultural literacy through K-12 education. An agriculturally literate person understands and can communicate the source and value of agriculture as it affects quality of life.

Program Premise: Our resources feature standards-based authentic agricultural content to enhance student learning. MAITC's overarching objective is to integrate, or embed, agriculture into core subjects such as social studies, science, English language arts and nutrition.

## MAITC Teacher Professional Development

MAITC provides high-quality workshops tailored to the needs of practicing and future teachers. We currently support K-12 teacher professional organizations and nearly 20 Colleges of Education via presentations with science or social studies methods classes. For more information contact MAITC Education Specialist, Sue Knott, at [sue.knott@state.mn.us](mailto:sue.knott@state.mn.us) or 651-201-6486.

## Educational Resources

Find us fast at [www.mda.state.mn.us/maitc](http://www.mda.state.mn.us/maitc): We offer many educational resources such as our student AgMag Series, AgMag Jr., Food for Thought geography resource, Minnesota School Garden Guide, Ag Literacy Grants, Children's Literature Book Bundles, Ag-based K-12 Lessons Library, teacher tours, and other supplemental resources. All MAITC resources are FREE except for the new grade level K-2 and 3-5 book bundles (see more details below). For more information contact:

Al Withers – MAITC Program Director  
[alan.withers@state.mn.us](mailto:alan.withers@state.mn.us) or 651-201-6688

Sue Knott – MAITC Education Specialist  
[sue.knott@state.mn.us](mailto:sue.knott@state.mn.us) or 651-201-6486

## About the MAITC Children's Literature Book Bundles and Educator Guides

Each Educator Guide introduces you to the ten books in the bundle (K-2 or 3-5) and serves as a reference guide for each of the books. They are designed to stimulate appropriate discussion and to extend student learning beyond the book content itself. The books and suggested activities, lessons, and resources offer easy connections to many curricular areas.

## Book Bundle Ordering Information

Each MAITC Children's Literature Book Bundle includes ten books, along with the Educator Guide. The cost of each bundle is \$100, plus tax and \$10 for shipping/handling. For more information and/or to order, contact:

Finney Company in Apple Valley, MN: (800) 846-7027 or (952) 469-6699; email [info@finneyco.com](mailto:info@finneyco.com)







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# Beef Cattle: An A to Z Book

**Authors:** Susan Anderson and JoAnne Buggey

## Minnesota Academic Standards

### English Language Arts

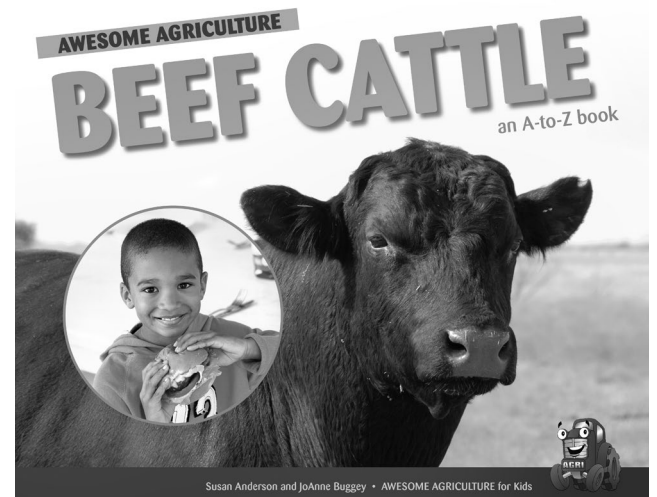
0.2.1.1, 1.2.1.1 Ask and answer questions about key details in a text.

0.8.2.2, 1.8.2.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.



### Agriculture Focus

Introduces beef cattle to younger children while discussing why beef cattle are important to the United States and how we benefit from being a cattle-producing country.



## Summary

This A-to-Z book presents important cattle facts alphabetically with each page introducing a new vocabulary word illustrated with a photo.

## Listening Questions to Ask Before Reading

- What colors can beef cattle be? (black, white, brown, etc.)
- What is the name for baby cattle? (calf) What are male cattle called? (bull, steer) What are female cattle called? (cow, heifer)
- How do ranchers and farmers identify their cattle? (ear tags, branding)

## Discussion Questions to Ask After Reading

- Is your state one of the top 10 states that produces the most beef cattle? If not, what state(s) are the closest to you that do?
- What foods have you eaten this week that were made with beef?
- What do beef cattle eat?
- What types of jobs did you see in the pictures that come from working with cattle?

## Words to Know

**Grazing:** eating grass in a field

**Herd:** a group of animals that live together

**Hooves:** a part of beef cattle's feet that they walk on

**Protein:** a nutrient that builds, maintains and replaces tissues in your body. Muscles, organs and the immune system are made-up mostly of protein. Food sources for protein are beef, poultry, fish, eggs, dairy products, nuts, seeds, beans and lentils.

**Ration:** a certain amount and kind of food that an animal eats

## Lessons and Activities

Animal Life Cycles

**Art:** Have students design their own cattle ear tag.

**Language Arts:** Visit a cattle farm or interview a cattle farmer; write a story about what you would like or not like about living on a cattle farm.

**Language Arts:** Write the word 'cattle' on the board for students to reference. Have students stand in a circle and going clockwise students will spell the word 'cattle', one letter per student. Once the word is spelled, the next student in line must sit down. Choose other vocabulary words from the book to make the game more difficult.

**Other:** Make a list of favorite foods made with beef. Try a beef recipe.

## Related MAITC Resources

Agriculture Commodity Cards

Farm Animal Bookmark

Agriculture By-Products Poster

Agriculture is Everywhere! Poster

Where Does Your Cheeseburger Come From? Poster

Where Does Your Pizza Come From? (Primary) Poster

Lessons and Related MAITC Resources are all available FREE at [www.mda.state.mn.us/maitc](http://www.mda.state.mn.us/maitc)

# The Beeman

**Author:** Laurie Krebs  
**Illustrator:** Valeria Cis

**Lexile:** NC1080L  
**AR Points:** .5

## Minnesota Academic Standards

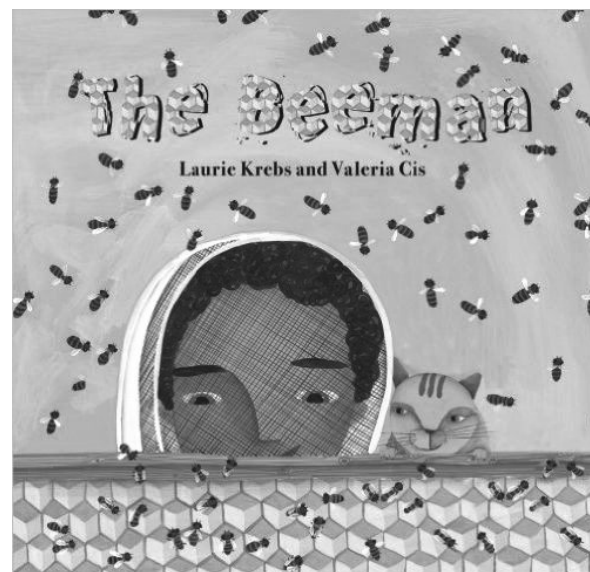
### English Language Arts

0.1.1.1, 1.1.1.1, 1.1.1.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

0.1.4.4, 1.1.4.4, 2.1.4.4 Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.

### Science

1.4.3.1.1 Demonstrate an understanding that animals pass through life cycles that include a beginning, development into adults, reproduction and eventually death.



### Agriculture Focus

Bees are very valuable contributors to agriculture. Honeybees are responsible for 80% of all crop pollination. Explore the tools, equipment and actions that are necessary to care for bees and ensure their populations are healthy and active to pollinate specialty crops like berries, fruits and vegetables.

### Summary

This story follows a young boy and his grandpa, known as the Beeman, while describing where bees live, how honey is made and what a beekeeper does.

## Listening Questions to Ask *Before* Reading

- About how many bees live in a colony or group? (50,000)
- The cells that make up honeycomb have how many sides? (six)
- Which bee is the largest in the colony? (the queen)
- What is pollination? (when bees carry pollen from plant to plant, which helps plants grow fruits or seeds)
- How do bees communicate? (dance)

## Discussion Questions to Ask *After* Reading

- Why are honeybees important to humans?
- What would your garden look like without pollination?
- What are the jobs of different bees in the colony?

## Words to Know

**Colony:** a group of honeybees

**Deep:** the boxes where bees live, store honey and raise young bees; a deep holds twice as much honey as a shallow

**Extractor:** piece of mechanized equipment used to remove honey from frames; it extracts honey from the honeycomb without destroying the comb

**Hive:** the shelter (house) where a colony (group) of bees live

**Pollen:** powder that fertilizes plants and helps fruit and seeds to grow

**Pollinate:** to distribute pollen from plant to plant

**Shallow:** the boxes where bees live, store honey and raise young bees; a shallow holds half as much honey as a deep

**Smoker:** a tool that gives off smoke that is used to calm bees

## Lessons and Activities

Disappearing Honeybees  
Flower Power  
The Honey Files

**Language Arts:** “Busy as a bee” is a simile; make a class list of other animal similes and discuss how these might have begun.

**Phys Ed:** Break into groups and try the two bee dances described in the book.

**Science:** Plant a “bee garden” of yellow flowers, especially squash or beans. Observe the flowers and keep a record of bee visits and plant growth.

**Science:** Collect a variety of flowers or use stargazer lilies and identify the stamen; shake the flowers over black construction paper to see the pollen.

**Other:** Make a recipe with honey – a recipe for Grandma’s Apple and Honey Muffins is included in the back of this book.

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Lessons and Related MAITC Resources are all available FREE at [www.mda.state.mn.us/maitc](http://www.mda.state.mn.us/maitc)



# The Fruits We Eat

**Author and Illustrator:**  
Gail Gibbons

**Lexile:** AD670L  
**AR Points:** .5

## Minnesota Academic Standards

### English Language Arts

0.2.1.1, 1.2.1.1, 2.2.1.1 Ask and answer questions about key details in a text.

0.2.7.7, 1.2.7.7, 2.2.7.7 Use the illustrations and details in a text to describe its key ideas.

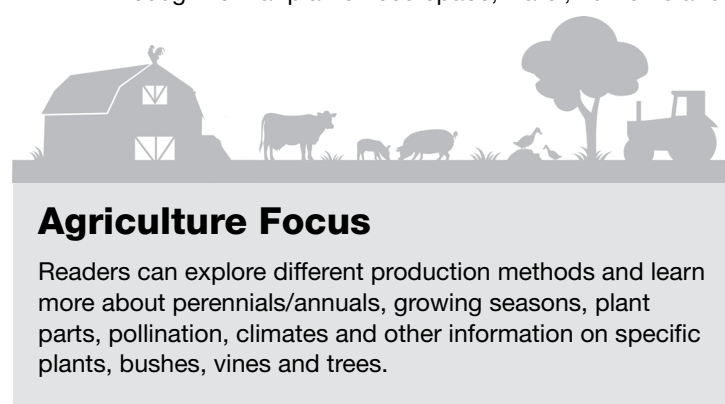
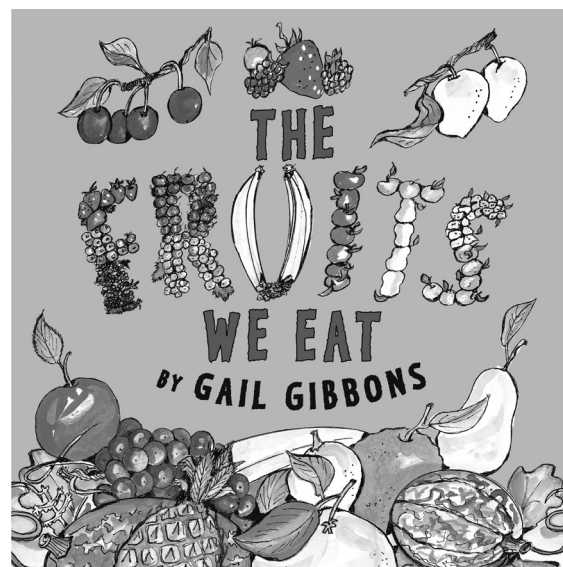
### Health

1.1 The student will describe how individual behavior affects individual health.

### Science

2.4.1.1.1 Describe and sort plants into groups in many ways, according to their physical characteristics and behaviors.

2.4.2.1.1 Recognize that plants need space, water, nutrients and air, and that they fulfill these needs in different ways.



### Agriculture Focus

Readers can explore different production methods and learn more about perennials/annuals, growing seasons, plant parts, pollination, climates and other information on specific plants, bushes, vines and trees.

## Summary

This picture book with simple text introduces readers to the many ways different fruit is produced.

## Listening Questions to Ask *Before* Reading

- How many cups of fruit should kids try to eat each day? (1 to 1.5 cups each day)
- Can you name a few examples of berries? (strawberries, blueberries, raspberries, cranberries)
- What is a seasonal climate? (where the weather changes throughout the year, creating seasons)

## Discussion Questions to Ask *After* Reading

- What are your favorite fruits? How are they grown?
- What is pollination?
- What is a perennial? What is an annual?
- What fruits grow where you live?
- What are some of the ways you eat fruits?

## Words to Know

**Annual:** plants that perform their entire life cycle from seed to flower to seed within a single growing season

**Dormant:** alive but not growing

**Perennial:** plants that continue for many growing seasons

**Pistil:** female organ of a flower; comprised of the stigma, style and ovary

**Prune:** to trim or remove branches to shape a plant or help its growth

**Stigma:** the part of the pistil that receives pollen during pollination

**Style:** structure found within the pistil; the thin stalk that connects the stigma (where pollen is deposited) to the ovary (fruit)

**Vegetation:** all the plants in an area

## Lessons and Activities

Fruity Counters  
Make Room for Raddy  
Minnesota Apple Pie  
Plant Parts Become Me  
Right Plants, Right Place  
The Healthy Hop 'n Shop

**Art:** Assign students to draw annual and perennial plants from a list. Once they draw the picture, have students exchange their picture with another student and they must determine if the plant is an annual or perennial and why.

**Art:** Draw lines dividing a piece of paper into four, one box for each season. Choose a fruit and draw a picture of what the fruit looks like in each season of growth.

**Science:** Assemble a sample of various dried fruit (mangoes, banana chips, apple chips, etc., found at a grocery store) and fresh fruits of the same kinds. Taste-test the fresh and dried fruits; report on the differences or similarities.

**Language Arts:** Ask students to write about the adventures of a fruit that gets lost in an orchard and finds its way home by asking for help from different fruits in the orchard. Could be a map-making exercise for younger children where the class creates the story plot and the students create the map from the class's completed story.

## Related MAITC Resources

Agriculture is Everywhere! Poster  
Minnesota School Garden Guide

Lessons and Related MAITC Resources are all available FREE at [www.mda.state.mn.us/maitc](http://www.mda.state.mn.us/maitc)

# How Did That Get in My Lunchbox? The Story of Food

**Author:** Chris Butterworth  
**Illustrator:** Lucia Gaggiotti

**Lexile:** 870L  
**AR Points:** .5

## Minnesota Academic Standards

### English Language Arts

1.2.3.3, 2.2.3.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

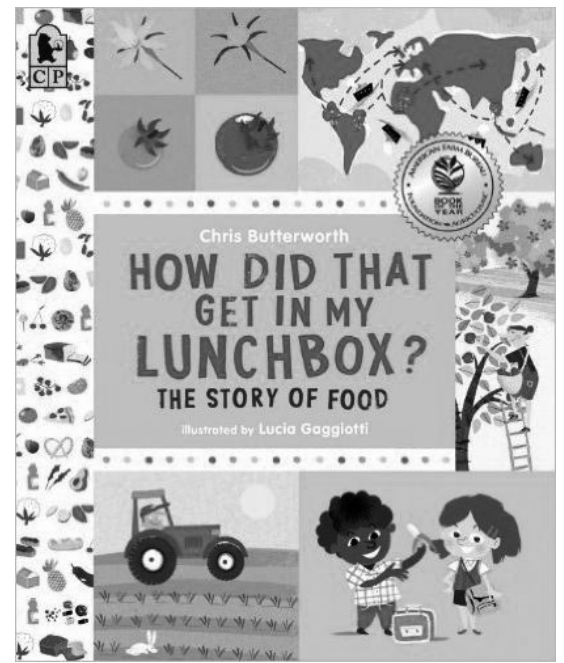
### Health

1.1 The student will describe how individual behavior affects individual health.



### Agriculture Focus

Encourages students to look at the many steps involved in producing some common foods found in children's lunchboxes while taking a peek at basic food groups.



## Summary

This story starts with a child's lunchbox and follows the process of getting each item into the lunchbox. From planting wheat to mixing dough, climbing trees to machine-squeezing fruit, picking carrots to washing and packing, students will examine the processes involved in getting food from farms to their lunch tables.

## Listening Questions to Ask *Before* Reading

- What does a baker mix with flour to turn it into dough? (water, sugar and yeast)
- How long is cheese stored in blocks to become ripe? (many months to a year or more)
- Before tomatoes turn a deep red color, what other colors are they? (bloom with yellow flowers, turn into tiny green tomatoes, orange and then red)
- What do the flowers on apple trees turn into? (tiny buds that grow into apples)

## Discussion Questions to Ask *After* Reading

- What do you like to eat for lunch? What kinds of foods are included in a healthy lunch?
- Which of the foods described in the book are grown in Minnesota? Why aren't all of them grown in your state?
- Where does each of the items in the student's lunch belong on the MyPlate® diagram?
- What kind of jobs did people in the story have in order to produce food and bring it to you?

## Words to Know

**Buds:** swelling on stems of plants that will grow into a flower, leaf or branch

**Carbohydrates:** foods that fill you up fast and give you energy

**Combine:** harvesting machine that gathers and prepares crops for trucking (in this story, cutting wheat in the field)

**Grains:** the seed part of cereal plants, such as wheat, corn, rye and rice

**Grove:** group of trees without underbrush that may grow fruit or nut trees

**Orchard:** area of land devoted to growing fruit or nut trees

**Protein:** a nutrient that builds, maintains and replaces tissues in your body. Muscles, organs and the immune system are made-up mostly of protein. Food sources for protein are beef, poultry, fish, eggs, dairy

products, nuts, seeds, beans and lentils.

**Rennet:** a substance that animals use to digest milk

**Ripe:** when the fruit or grain has developed fully and is ready for harvesting and eating

## Lessons and Activities

A Journey Around Minnesota

Earth as an Apple

Source Relay

The Healthy Hop 'n Shop

**Art:** Draw a picture of the foods in your lunch; label each item with the type of farm it came from (crop, beef, poultry, dairy, orchard, etc.) Put a star by the farms that could be in Minnesota.

**Health:** Create a food menu while including healthy menu items from each part of the MyPlate® diagram.

**Language Arts:** Have students write a mystery describing a food that seems to be missing from a student's lunch. Encourage students to describe the missing food's crazy adventures before it is found or makes its way back to the lunchbox.

**Language Arts:** Write a letter to a farmer, thanking him/her for growing food to eat. Tell why you like that food and how it keeps you healthy.

**Other:** Make a 'Minnesota Farm Meal' with foods from Minnesota farms, such as beef, dairy products, soybeans, peas, honey, etc.

## Related MAITC Resources

Agriculture Commodity Cards

Farm Animal Bookmark

Agriculture By-Products Poster

Agriculture is Everywhere! Poster

Where Does Your Cheeseburger Come From? Poster

Where Does Your Pizza Come From? (Primary) Poster

Minnesota School Garden Guide

Lessons and Related MAITC Resources are all available FREE at [www.mda.state.mn.us/maitc](http://www.mda.state.mn.us/maitc)

# The Life and Times of Corn

**Author and Illustrator:**  
Charles Micucci

**Lexile: 980L**  
**AR Points: 1**

# Minnesota Academic Standards

## English Language Arts

2.2.1.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

2.8.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

## Science

2.4.3.1.1 Describe the characteristics of plants at different stages of their life cycles. For example: Use live organisms or pictures to observe the changes that occur during the life cycle of bean plants or marigolds.

## Social Studies



## Agriculture Focus

Minnesota is a leading producer of dent (field corn) used in livestock feed as a food ingredient and as a fuel (ethanol). Corn can be found in more than 3,500 products in a grocery store.



2.4.1.2.1 Use historical records and artifacts to describe how people's lives have changed over time.

## Summary

Everything you need to know about corn: history of corn (maize), kinds of corn, growing cycle, harvesting and the many uses of corn. The book also looks at the role of corn in various cultures.

## Listening Questions to Ask *Before* Reading

- Where is corn native to? (North and South America)
- What did the early Native Americans use corn for? (food like corn bread and tortillas, corn husk baskets and dolls, doormats)
- What are the 'Three Sisters'? (Native Americans combined corn, beans and squash in their garden to save space)
- Can you name one or more kinds of corn? (sweet, dent or field, heirloom, popcorn)

## Discussion Questions to Ask *After* Reading

- Can you name a favorite food made of corn?
- What did the Native Americans call corn?
- Can you name the parts of a corn plant?
- What causes popcorn to pop?
- Do you live in a leading corn-producing state? Which one?

## Words to Know

**Bushel:** the equivalent of 56 pounds of corn

**Dent corn:** the most widely used corn in the world; kernel tops have dents; is used to feed livestock, as a sweetener and for industrial products such as corn ethanol

**Hybrid:** in biology a hybrid, also known as a cross breed, is the mixing through sexual reproduction of two animals or plants of different breeds, varieties or species

**Maize:** Native American name for corn

**Open pollination:** pollination by insects, birds or wind

**Popcorn:** America's oldest kind of corn; must contain some moisture in order to pop

## Lessons and Activities

Heredity in Corn - A Living Necklace  
Seed Tasting  
Three Sisters Garden

**Art:** Make cornhusk dolls as made by early Colonists and eastern Native Americans.

**Geography:** Color the Corn Belt states on a U.S. map. Highlight leading Minnesota corn production areas.

**Language Arts Writing Activity:** Have students write/draw a story/picture from the kernel of corn's view point. What does it see when it pops open?

**Language Arts:** Imagine a new corn hybrid, name it, explain why it was invented and write a story about how it solved a problem or helped people.

**Science Experiment:** Store popcorn in different locations like the refrigerator, cupboard, etc. Pop the popcorn and see if the number of kernels popped or unpopped varies depending on where the popcorn was stored.

**Science:** Evaluate ingredient lists on food/nonfood products and make a display of products that include corn.

**Other:** Make popcorn and string into corn garlands for bird food.

## Related MAITC Resources

Agriculture Commodity Cards  
Agriculture By-Products Poster  
Agriculture is Everywhere! Poster

Lessons and Related MAITC Resources are all available FREE at [www.mda.state.mn.us/maitc](http://www.mda.state.mn.us/maitc)



# Oh Say Can You Seed?

**Author:** Bonnie Worth  
**Illustrator:** Aristides Ruiz

**Lexile:** AD650L  
**AR Points:** .5

## Minnesota Academic Standards

### English Language Arts

2.2.3.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

2.2.6.6 Identify the main purpose of a text, including what the author wants to answer, explain, or describe.

### Science

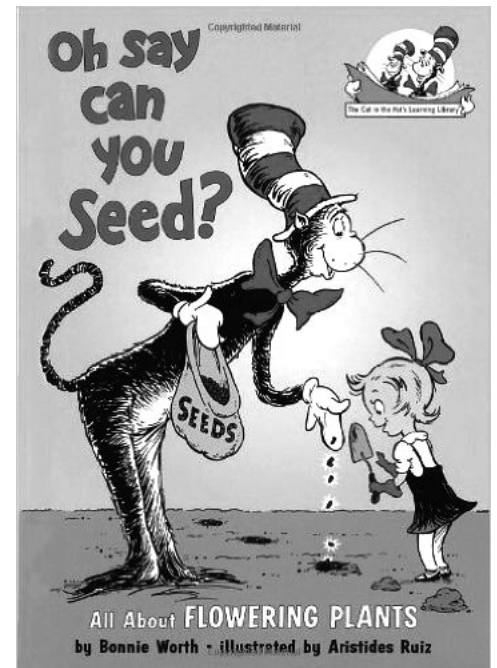
2.4.2.1.1 Recognize that plants need space, water, nutrients and air, and that they fulfill these needs in different ways.

2.4.3.1.1 Describe the characteristics of plants at different stages of their life cycles.



### Agriculture Focus

Investigate the importance of flowering plants from seed to flower including photosynthesis, pollination and seed dispersal.



## Summary

The Cat in the Hat, in his rhyming way, shares knowledge about flowering plants, parts of seeds, plants and flowers, photosynthesis, pollination, fertilization and uses of plants.

## Listening Questions to Ask *Before* Reading

- How many basic parts are there to a seed? (three – embryo, cotyledon, seed coat)
- In a process called photosynthesis what are plants making? (food)
- What gas do plants breathe out that we breathe in? (oxygen)

## Discussion Questions to Ask *After* Reading

- What have you grown from seeds? Did your plant grow slowly or quickly?
- Have you ever looked at the roots of plants? Can you think of some roots that we eat?
- Plants provide many things for us. Can you name some of the things we get from plants?
- What are your favorite fruits and vegetables? How many fruits and vegetables do you eat each day?

## Words to Know

**Carbon dioxide:** gas that humans and animals breathe out and is taken in by plants during photosynthesis

**Cotyledon:** first leaf or pair of leaves in a seed which supplies food to the developing embryo

**Embryo:** part of a seed which becomes the new plant including roots, stem, and leaves

**Germination:** when seeds begin to grow, sprout and develop

**Oxygen:** gas which green plants produce during photosynthesis and which humans and animals must breathe in order to live

**Photosynthesis:** the process by which plants turn sun, water and air into food

**Pollination:** to distribute pollen from plant to plant

## Lessons and Activities

Garden in a Glove  
Heredity in Corn - A Living Necklace  
Plant Life Cycle Game  
Plant Pals - A Living Necklace  
Plant Parts Become Me  
Seed Tasting

**Art:** Assemble a variety of Minnesota grown fruits and vegetables; make a sculpture with them or paint them with a variety of faces (then show off your healthy crowd).

**Language Arts:** Write some poems about plants, fruits or seeds. Try to write poetry similar to the style that is used in Dr. Seuss books. Investigate other types of poetry and write “plant” poems using other styles. Include Thing 1 and Thing 2 in some of the poetry.

**Science:** Soak lima beans in a wet paper towel. Make sure the paper towel is very wet. After 24 hours peel off the seed coat, open the cotyledon and look for the tiny embryo inside. Try this with other seeds as well.

**Science:** Plant two lima bean seeds in a paper cup filled with soil (houseplant or seed-starting soil works best). Water only enough to moisten the soil. Cover with plastic and a rubber band. Check daily and track its progress. When the seedling appears, remove plastic and water as needed.

**Science:** Plant two seeds – corn, soybeans, pumpkins, etc. Once they have sprouted and have several leaves, put some of the plants in a dark place where they will not get sunshine and some in a sunny area. After several days to a week, compare the leaves that received sunlight to the leaves that have not. Discuss photosynthesis, chlorophyll and its effect on the condition and color of the leaves of the plants.

## Related MAITC Resources

Agriculture Commodity Cards  
Agriculture is Everywhere! Poster  
Minnesota School Garden Guide

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# Pigs: An A to Z Book

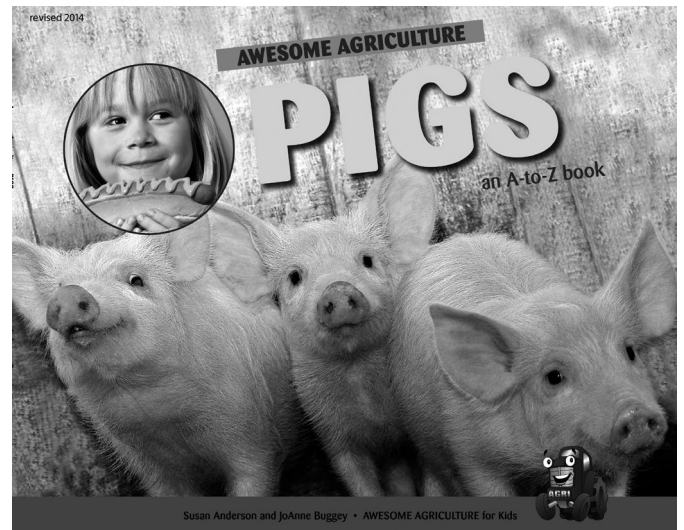
**Authors:** Susan Anderson and JoAnne Buggey

## Minnesota Academic Standards

### English Language Arts

0.2.1.1, 1.2.1.1 Ask and answer questions about key details in a text.

0.8.2.2, 1.8.2.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.



### Agriculture Focus

Introduces pigs to younger children while discussing how and where pigs are raised, what they eat and the by-products we get from pigs. Minnesota is a leading state for pig production, mainly in the southwest portion of the state.

## Summary

This A-to-Z book presents important pig facts alphabetically with each page introducing a new vocabulary word illustrated with a photo.

## Listening Questions to Ask Before Reading

- What do pigs eat? (feed made mostly of corn, soybeans and wheat)
- A baby pig is called what? (piglet) A male pig is called what? (boar)  
A female pig is called what? (sow)
- What are the top 3 pig-producing states in the United States? (Iowa, Minnesota and North Carolina)

## Discussion Questions to Ask After Reading

- Is your state one of the top 10 states that raises the most pigs? If not, what state(s) are the closest to you that do?
- What are some of your favorite pork products?
- What types of jobs did you see in the pictures that work with pork production?
- Why do people shower before going into a pig barn?

## Words to Know

**Boar:** a male pig

**Piglet:** newborn pig

**Pork Producer:** farmers who raise pigs

**Pork:** the meat from pigs

**Sow:** mother pig

## Lessons and Activities

Animal Life Cycles

**Art:** Photocopy or draw a picture of a piglet. Illustrate and label the parts of a pig.

**Language Arts:** Visit a pig farm or interview a pig farmer; write a story about what you would like or not like about living on a pig farm.

**Language Arts:** Write a poem or make a song about pigs.

**Other:** Make a list of favorite foods made with pork. Try a pork recipe.

## Related MAITC Resources

Agriculture Commodity Cards

Farm Animal Bookmark

Agriculture By-Products Poster

Agriculture is Everywhere! Poster

Where Does Your Pizza Come From? (Primary) Poster

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# Seed – Soil – Sun: Earth's Recipe for Food

**Author:** Cris Peterson  
**Photographer:** David Lundquist

**Lexile:** AD1050L  
**AR Points:** .5

## Minnesota Academic Standards

### English Language Arts

0.2.1.1, 1.2.1.1, 2.2.1.1 Ask and answer questions about key details in a text.

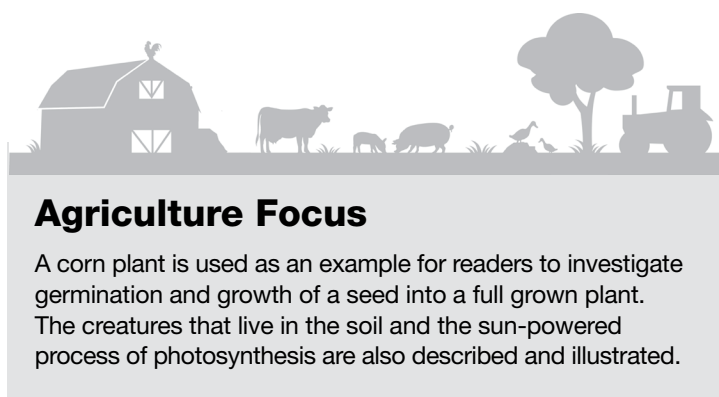
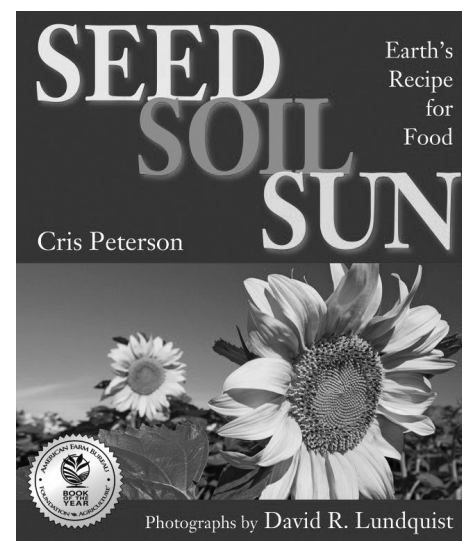
0.2.7.7, 1.2.7.7, 2.2.7.7 Use the illustrations and details in a text to describe its key ideas.

### Science

0.3.2.2.2 Identify the sun as a source of heat and light.

2.4.2.1.1 Recognize that plants need space, water, nutrients and air, and that they fulfill these needs in different ways.

2.4.3.1.1 Describe the characteristics of plants at different stages of their life cycles.



## Summary

This informational book with vivid photographs describes the process by which air and water combine with seed, soil and sun to create nearly all the food we eat.

## Listening Questions to Ask *Before* Reading

- What ingredients does the earth need to provide and produce our food? (seeds, soil, sun and water)
- Which seed is planted more than any other kind of seed in the United States each year? (corn)
- Which part of the seed grows down into the soil? (roots)
- Which part of the seed grows up toward the sun? (shoot)

## Discussion Questions to Ask *After* Reading

- Plants are the only living things that can use the sun's energy to grow. How do we grow?
- Why is soil important to humans?
- What do plants do with the extra energy they create?
- Think of some plant parts that you have eaten in the past week. When these were still part of a growing plant, what was the purpose of each part that you ate?

## Words to Know

**Germinate:** to begin to grow from a seed to a plant

**Harvest:** the process of gathering mature crops from the fields

**Ingredient:** any of the foods or substances that are combined to make something

**Microscopic:** a very small object that can only be seen when looking through a microscope

**Minerals:** a solid inorganic substance of natural occurrence

**Organisms:** an individual form of life such as bacterium, protist, fungus, plant or animal composed of a single cell or complex of cells in which organs work together to carry out the various processes of life

**Photosynthesis:** the process by which plants turn sun, water and air into food

**Root:** the underground part of a plant that takes in nutrients

**Shoot:** part of a seed that grows up towards the sun

## Lessons and Activities

Garden in a Glove  
Heredity in Corn - A Living Necklace  
It All Begins With Soil  
Magic Beans and Giant Plants  
Plant Life Cycle Game  
Plant Parts Become Me  
Seed Tasting

**Art:** Draw, color and cut out small pictures of decomposers; make a topsoil collage showing the many creatures living in the soil.

**Language Arts:** Read *Diary of a Worm* by Doreen Cronin; Write a story about saving the soil from a worm's perspective.

**Language Arts:** Write a poem about plants or seeds.

**Science:** Search through gardens and the school yard to find plants that have stems, leaves, roots, flowers and fruits. Compare and contrast the size, shape, color, etc. of these plant parts on a variety of plants.

## Related MAITC Resources

Agriculture Commodity Cards  
Agriculture is Everywhere! Poster  
Minnesota School Garden Guide

Lessons and Related MAITC Resources are all available FREE at [www.mda.state.mn.us/maitc](http://www.mda.state.mn.us/maitc)



# Soybeans: An A to Z Book

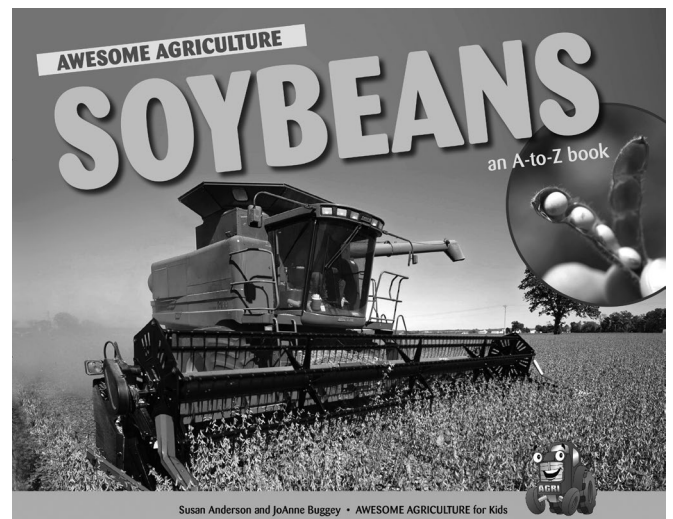
**Authors:** Susan Anderson and JoAnne Buggey

## Minnesota Academic Standards

### English Language Arts

0.2.1.1, 1.2.1.1 Ask and answer questions about key details in a text.

0.8.2.2, 1.8.2.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.



### Agriculture Focus

Introduces soybeans to younger children while discussing soybean plants, products derived from soybeans and jobs in the soybean industry. Minnesota is a leading state for the production of soybeans.

## Summary

This A-to-Z book presents important soybean facts alphabetically with each page introducing a new vocabulary word illustrated with a photo.

## Listening Questions to Ask Before Reading

- What are some co-products and by-products we get from soybeans? (biodiesel, candy, dog food, ink, lotions, soybean oil, tofu)
- During which season of the year does a farmer plant soybeans? (spring)
- During which season of the year does a farmer harvest soybeans? (fall)
- What machine harvests the soybeans? (a combine)

## Discussion Questions to Ask After Reading

- Does your school bus use biodiesel? If so, what benefit does biodiesel provide?
- A soybean plant usually grows to be about 36 inches tall. How tall are your classmates in comparison?
- Is your state one of the top 5 states that grows soybeans? If not, what state(s) are the closest to you that do?
- Make a list of foods you have eaten today that contain soybeans.

## Words to Know

**Biodiesel:** fuel made from soybeans

**Harvest:** the process of gathering mature crops from the fields

**Protein:** a nutrient that builds, maintains and replaces tissues in your body. Muscles, organs and the immune system are made-up mostly of protein. Food sources for protein are beef, poultry, fish, eggs, dairy products, nuts, seeds, beans and lentils.

**Tofu:** a food made from mashed soybeans

## Lessons and Activities

Garden in a Glove  
Plant Pals - A Living Necklace  
Seed Tasting  
Show Me the Beans!

**Art:** Draw the parts of a soybean plant and label them.

**Social Studies:** Interview a soybean farmer and have him/her tell how farming has changed over the years.

**Science:** Taste soymilk, soy nuts, tofu and other foods made from soybeans. Discuss how they are alike or different than other similar foods.

**Other:** Ask students to search your classroom and their desks for materials printed with soy ink. See who can find the most!

**Other:** Ask students who have pets at home to read the label of their pet food to see if it contains soy. Make a list of the brands and types of pet food that contain soy.

## Related MAITC Resources

Agriculture Commodity Cards  
Agriculture By-Products Poster  
Agriculture is Everywhere! Poster

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# Tops and Bottoms

**Author and Illustrator:**  
Janet Stevens

**Lexile:** 580L  
**AR Points:** .5

## Minnesota Academic Standards

### English Language Arts

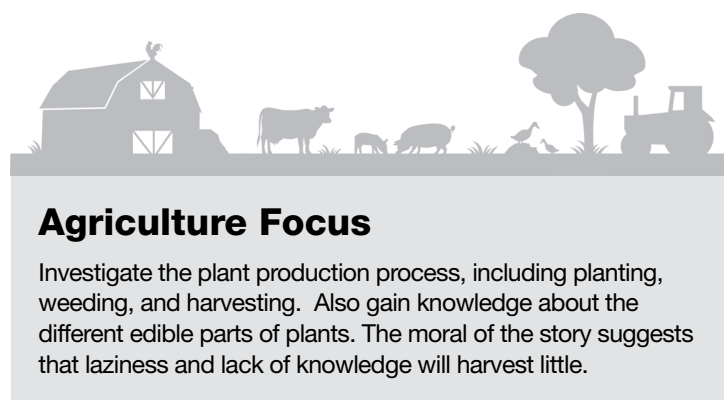
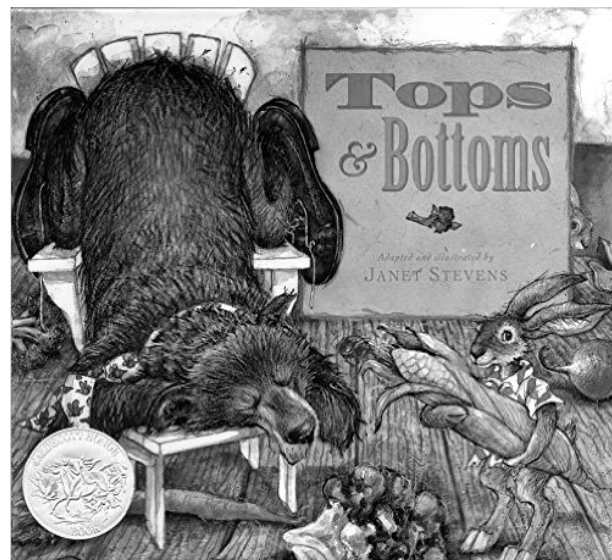
- 0.1.2.2, 1.1.2.2, 2.1.2.2 Retell stories, including key details, and demonstrate understanding of their central message or lesson.

### Science

- 0.4.1.1.2 Identify the external parts of a variety of plants and animals including humans.
- 2.4.1.1.1 Describe and sort plants into groups in many ways, according to their physical characteristics and behaviors.

### Social Studies

- 0.2.1.1.2 Identify goods and services that could satisfy a specific need or want.
- 1.2.1.1.1 Describe some costs and benefits of alternative choices made by families.



### Agriculture Focus

Investigate the plant production process, including planting, weeding, and harvesting. Also gain knowledge about the different edible parts of plants. The moral of the story suggests that laziness and lack of knowledge will harvest little.

## Summary

Hare turns his bad luck around by striking a clever deal with the rich and lazy Bear down the road. Each harvest brings tops, bottoms or middles, and Bear ends up with the wrong end every time—until he learns his lesson! The book received a Caldecott Honor.

## Listening Questions to Ask *Before* Reading

- What are some plants that have good “bottoms” to eat? (radishes, carrots, beets, potatoes)
- What are some plants that have good “tops” to eat? (lettuce, broccoli, celery)
- What is a plant that has good “middles” to eat? (corn)

## Discussion Questions to Ask *After* Reading

- Why did Bear always get the less tasty parts of the plant?
- What lesson do you think the story tries to teach?
- Do you know of any certain plants that are poisonous (leaves of poinsettias, leaves of rhubarb, etc.) It's good to try new foods, but always check that it's safe to eat.
- What parts of plants do you like to eat?
- Why is knowledge of plant parts and where they grow valuable knowledge to have?

## Words to Know

**Crops:** plants grown for food or other products

**Harvest:** the process of gathering mature crops from the fields

**Profit:** something earned or gained after paying expenses ... usually the result of working

## Lessons and Activities

Plant Tops and Bottoms  
What Are We Eating?

**Art/Drama:** After reading the story, turn it into a script, assign parts and present a play.

**Language Arts:** This story has roots in European folktales; read another folktale and a fairy tale. Discuss what is similar or different about these kinds of stories.

**Science:** Sample examples of plants with more than one edible part or surprising edible parts, such as green onions (raw bulb and greens), beets (cooked bulb and cooked or raw greens), young spring dandelions (raw leaves, steamed flowers), bee balm (leaves and flower petals) and others. Note: Be sure that you have the exact edible flower or plant and that no pesticides or chemicals have been sprayed on any part of the plant before eating. Wash all items well before eating.

**Science:** Plant two lima bean seeds in a paper cup filled with soil (houseplant or seed-starting soil works best). Water only enough to moisten the soil. Cover with plastic and a rubber band. Check daily and track its progress. When the seedling appears, remove the plastic and water as needed.

## Related MAITC Resources

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Agriculture is Everywhere! Poster  
Minnesota School Garden Guide

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